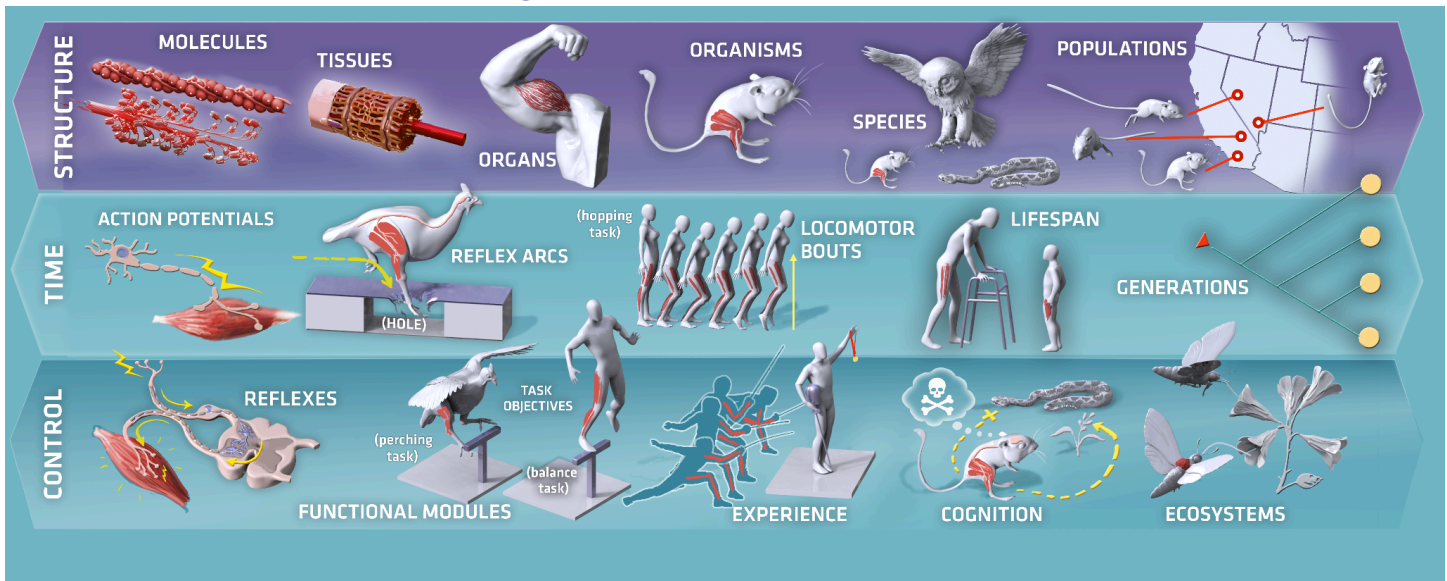


NSF-BII Integrative Movement Sciences Institute



Now recruiting research trainees and near peer-mentors Integrative Movement Sciences Summer Institute 2024

To apply to participate, complete this form: <https://forms.gle/wT98KZjDnS13tVCJ7>

Candidates should apply by 15th April, 2024

Do you love biology, physics, physiology and biomechanics? Do you find movement to be fascinating? Are you looking for research training in state-of-the-art techniques and effective scientific communication? Are you excited to tackle an interdisciplinary scientific project with mentor/mentee relationships?

The IMSI Summer Institute is an interdisciplinary research and training incubator that involves a network of faculty spanning 21 institutions across the country. Each research team will collaborate on a specific research project aligned with IMSI themes of investigating 1) dynamic muscular control of movement in unsteady and perturbed conditions, 2) bridging across organizational scales through integrated experiments and modeling, 3) bridging between human and comparative studies of movement, and 4) investigating movement in ecologically relevant complex environmental conditions. IMSI participants will be organized in project teams consisting of 2 or more faculty co-supervisors from different fields and institutions, a graduate student or postdoc near-peer mentor, and 1-2 junior trainee researchers (highschool, undergraduate, or postbac). Each team will participate in the training curriculum alongside the entire IMSI-Summer Institute cohort. In addition, IMSI includes multiple workshops in inclusive mentoring and team-based science approaches. Projects include evaluating movement, modeling muscle, mathematical descriptions of behavior, comparing mechanics and performance across species, exploring unique datasets of elite human athletes, and more!

Locations: UC Irvine, NAU, USC, GA Tech, CO School of Mines, & other participating labs, with virtual/online components.

Dates:

- Projects can vary between **6-10 weeks duration**, with specific dates determined by project supervisors, based on specific project needs and local academic calendars.
- Research workshops: **July 1st- July 31st 2024**, meeting virtually 2x per week,
- UCI based projects: **July 1st- August 24th 2024**
- Capstone symposium (all day) **Friday September 6th 2024** (tentative date, to be confirmed)

Funding (*subject to NSF eligibility criteria, see footnote):

Training stipends: \$600/week for the project duration for trainees participating full time in research projects and training curriculum. Part time participation will need to be approved by faculty supervisors, with stipend rate pro-rated according to fraction of full time spent on research.

Mentors: \$500 mentoring fellowship stipend for near-peer mentors who will meet regularly with their mentees and complete an inclusive mentorship certification program (~2-3 hours per week x 4 weeks). Mentors are typically senior graduate students or postdoctoral scholars who will be matched as mentors to junior trainees.

Mentor-trainees: Participate as trainees on a project in a new area outside their current research, and also act as near-peer mentors for junior trainees. Mentor-trainees will receive both the training stipend and the mentoring fellowship stipend.

Housing and travel: For those participating in projects away from their home institution, we will reimburse for economy travel and assist with housing costs. Housing support must be requested and approved in advance so we can help identify and book University-approved housing options.

Trainee expectations: Research trainees will be expected to 1) participate full time in research for the project duration, 2) meet regularly with co-supervisors, mentors and the project team, 3) attend online/virtual IMSI research workshops that will be held regularly between July 1st-31st 2024, and 4) present research findings in a 1-day capstone symposium, to be held in early Autumn (tentatively scheduled for September 6th 2024). If you need part time research arrangements in order to participate, or if you have a conflict with the capstone symposium date, please contact Dr. Daley to discuss.

Project timing and duration: We allow projects between 6-10 weeks to accommodate different project needs and scheduling constraints. We will do our best to match trainees to projects that match both their interests and scheduling constraints. However, some projects must occur over specific time periods to align with the local academic calendar, resource availability or field site conditions. Trainees will indicate their schedule availability and research interests on the application form, and we will offer projects that best align with both, to the extent possible. If your schedule is limited, there may be a limited range of projects available.

Background: Integrative Movement Sciences Institute: Muscle is the active tissue that drives the remarkable agility of animals, enabling feats of speed, endurance, and maneuverability in challenging environments. Understanding how muscle controls movement is essential for animal performance and evolution, and for maintaining human health throughout life. However, muscle function during fast, unsteady motions in complex environments cannot be accurately predicted by current models. Current understanding is limited by isolation among fields, resulting in knowledge gaps between “bottom-up” reductionist approaches that characterize molecules and tissues and “top down” organismal approaches that focus on animal behavior. The Integrative Movement Sciences Institute (IMSI) aims to bridge these gaps by connecting “bottom-up” and “top-down” approaches to integrate the contributions of mechanical, neural, and sensory systems to movement control. IMSI activities will drive innovation in biophysics, physiology, biomechanics, neuroscience, and engineering. Understanding the muscular control of agile movement has wide-reaching applications in bio-technology and the bio-economy through design of movement therapies, rehabilitation programs and mobility assistance devices.

Integrative and collaborative research training: In the spirit of life-long learning and interdisciplinary team science, faculty co-supervisors are expected to participate in research training workshops alongside trainees. The Summer Institute will culminate in a Capstone Research Symposium, where trainees present the findings and lessons learned from their research project activities. All participating faculty and trainees are expected to attend the symposium, which will be in a hybrid in-person and virtual format. Project teams will be expected to hold regular Zoom meetings to share progress and coordinate efforts across research sites. Research teams will also be expected to agree on shared data collection and management standards that align with the shared standards of the IMSI network.

Research workshop elements of the Summer Institute will focus on a different theme each week, with participating lab members leading demonstrations and seminars to share and teach background knowledge on traditional and emerging approaches in the field. The curriculum topics will be designed to build interdisciplinary connections across research teams and to encourage integration of concepts and approaches across organizational scales. IMSI faculty will collaboratively develop the curriculum for workshops and seminars with a focus on identifying important limitations and gaps in current knowledge and highlighting the potential for novel and emerging approaches that integrate across organizational scales to provide new insights. Scientific training activities will include a strong focus on hypothesis-driven experimental design, quantitative analysis and coding skills, model-based reasoning and integrating perspectives from models and experiments.

Training in effective mentorship and team-based science: Trainees will be matched to near-peer mentors within the network who will be trained in inclusive mentorship practices, supported by an Inclusive Mentoring Fellowship program. Mentors will be required to complete Inclusive Mentorship training workshops, who will be led by Dr. Nancy Aguilar-Roca, who is an education leader and certified inclusive mentor training facilitator. All IMSI participants will also be invited to join

in these workshops. Summer Institute participants will also be invited to attend workshops on interdisciplinary communication and team science, led by Dr Salazar-Campo, Director of the UCI Team Science Acceleration Lab.

* **Funding eligibility:** We will need to confirm NSF eligibility before distributing stipends. There some restrictions on distribution of stipend support, including specific cases below:

1) **Current UCI employees** (faculty, staff, postdocs) do not qualify as participants and are ineligible for stipend support. Individuals who fall into this category should speak to Dr. Daley about possible alternative funding mechanisms. This restriction does not apply to UCI undergraduates or graduate students who work part time on campus.

2) NSF guidelines state that stipend allowances may not be paid to trainees who are receiving compensation, either directly or indirectly, from other Federal government sources while participating in the project. This means that participants in the Summer Research Institute cannot simultaneously receive a stipend from government funded support (for example, on project grants or fellowships).

Individuals who have alternative sources of funding for the Summer (including the specific cases above), are welcome to fully participate in the IMSI training program.